RAPID COMMUNICATION

National influenza mid-season report, 2020–2021

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Abstract

Canada's national influenza season typically starts in the latter half of November (week 47) and is defined as the week when at least 5% of influenza tests are positive and a minimum of 15 positive tests are observed. As of December 12, 2020 (week 50), the 2020–2021 influenza season had not begun. Only 47 laboratory-confirmed influenza detections were reported from August 23 to December 12, 2020; an unprecedentedly low number, despite higher than usual levels of influenza testing. Of this small number of detections, 64% were influenza A and 36% were influenza B. Influenza activity in Canada was at historically low levels compared with the previous five seasons. Provinces and territories reported no influenza-associated adult hospitalizations. Fewer than five hospitalizations were reported by the paediatric sentinel hospitalization network. With little influenza circulating, the National Microbiology Laboratory had not yet received samples of influenza viruses collected during the 2020–2021 season for strain characterization or antiviral resistance testing. The assessment of influenza vaccine effectiveness, typically available in mid-March, is expected to be similarly limited if low seasonal influenza circulation persists. Nevertheless, Canada's influenza surveillance system remains robust and has pivoted its syndromic, virologic and severe outcomes system components to support coronavirus disease 2019 (COVID-19) surveillance. Despite the COVID-19 pandemic, the threat of influenza epidemics and pandemics persists. It is imperative 1) to maintain surveillance of influenza, 2) to remain alert to unusual or unexpected events and 3) to be prepared to mitigate influenza epidemics when they resurge.

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Introduction

This article is a summary of Canada's influenza season and is based on data available from August 23 to December 12, 2020 (epidemiologic weeks 35 to 50) in the weekly FluWatch reports prepared by the Public Health Agency of Canada (1).

Since the emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (the virus causing coronavirus disease 2019; COVID-19) in Canada in January 2020, the detection and containment of COVID-19 transmission has been the focus of health officials across Canada. In March of 2020, non-pharmaceutical health measures were implemented to reduce the spread of COVID-19. These measures coincided with an abrupt end to the 2019–2020 influenza season in Canada in mid-March (2,3). Seasonal influenza circulation in Canada (and worldwide) has remained at interseasonal-levels since the spring of 2020. The usual start of the annual seasonal influenza epidemic was absent both in the Southern Hemisphere winter season (July 2020), and, thus far, in the Northern Hemisphere winter season (4,5).

As of December 12, 2020, Canada had not reached the national seasonal threshold (positivity rate of at least 5% and a minimum of 15 positive tests) that signals the start of seasonal influenza activity (6). Typically, the influenza season starts around week 47 (mid-November). Over the past six seasons, the influenza season has begun as early as week 43 (mid-October) and as late as week 01 (early-January).

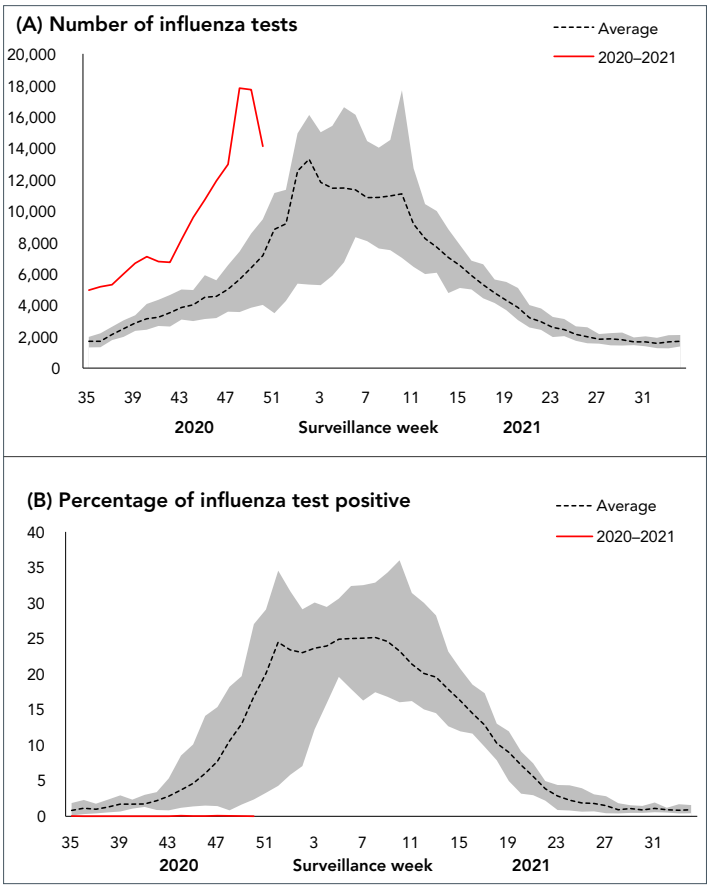
Results

Laboratory-confirmed influenza virus detections

A total of 47 laboratory-confirmed influenza virus detections have been reported since the 2020–2021 influenza surveillance season began at week 35 (August 23, 2020). Influenza A accounted for 64% (n=30) of the influenza viruses detected. Fewer than five influenza A viruses have been subtyped, which was insufficient to ascertain any circulating seasonal subtype

trends. The percentage of laboratory tests that were positive for influenza have remained at exceptionally low levels since March of 2020, despite elevated levels of testing. During weeks 35 to 50, reporting laboratories performed roughly twice the weekly average number of tests compared with the past six seasons (**Figure 1A**). During the same period, the percentage of tests that were positive for influenza were well below average (**Figure 1B**).

Figure 1: Number of influenza tests and percentage of tests positive, by report week, Canada, weeks 35 to 50 in 2020, compared with historical average, seasons 2014–2015 to 2019–2020



Note: The shaded area represents the maximum and minimum (A) number of tests performed or (B) percentage of influenza tests positive by week, from seasons 2014–2015 to 2019–2020

Syndromic

The healthcare practitioners' sentinel influenza-like illness (ILI) surveillance system reported below average percentages of visits due to ILI compared with previous seasons. Weekly percentages of visits due to ILI ranged from 0.1% to 0.8% (compared with the six-year average range of 0.6% to 1.5%). This was not unexpected given the changes in healthcare seeking behavior of individuals, additional healthcare options for individuals with ILI symptoms, a reduction in the number of sentinels reporting and a reduction in the average number of weekly patients seen. In the previous season, between weeks 35 and 50, a weekly average of 94 sentinels reported and an average of 8,775 patients were seen compared with the current season's weekly average of 67 sentinels reported and an average of 5,770 patients seen.

The FluWatchers program reported below average weekly percentages of participants reporting fever and cough compared with previous seasons. Weekly percentages of reports of fever and cough ranged from 0.1% to 0.5%, compared with the four-year average range of 1.5% to 2.9% between week 35 and week 50.

Outbreaks

The majority of ILI outbreaks to date (n=92) have been in schools and/or daycares. An outbreak of ILI in a school or daycare is reported when greater than 10% absenteeism due to ILI is observed.

The reported number of ILI outbreaks in schools and daycares was higher compared with the same period in the previous two seasons. This is not unexpected given changes in outbreak surveillance; specifically, the increased efforts in schools to monitor and report absenteeism due to ILI and the increased restrictions on attendance for children with symptoms of viral respiratory illness.

No laboratory-confirmed influenza outbreaks have been reported this season to date.

Severe outcomes

No influenza-associated hospitalizations have been reported by any of the participating provinces and territories (Alberta, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Prince Edward Island and Yukon).

Fewer than five paediatric hospitalized cases were reported by the Canadian Immunization Program Active.

Strain characterization and antiviral resistance testing

Due to the exceptionally low influenza circulation to date this season, the National Microbiology Laboratory has not yet received samples of influenza viruses collected during the 2020–2021 season for strain characterization or antiviral resistance testing.

Vaccine monitoring

The World Health Organization (WHO) has recommended that the 2020–2021 Northern Hemisphere egg-based influenza vaccine contain the following strains (7):

- A/Guangdong-Maonan/SWL1536/2019 (H1N1)pdm09-like virus
- A/Hong Kong/2671/2019 (H3N2)-like virus
- B/Washington/02/2019 (B/Victoria lineage)-like virus
- B/Phuket/3073/2013 (B/Yamagata lineage)-like virus (quadrivalent vaccine only)

The federal influenza immunization promotional campaign was launched October 19, 2020, to raise public awareness of the benefits of vaccination and to provide Canadians with the information they need to prevent influenza infections.

The seasonal influenza vaccine coverage survey is set to launch in January 2021. Annual coverage estimates are typically available toward the end of March.

The assessment of the effectiveness of the influenza vaccine, typically available in mid-March, is expected to be limited due to the low number of influenza infections.

Influenza surveillance system performance

Despite the COVID-19 pandemic, Canada's influenza surveillance system remains robust. Programs and/or data providers within the seven components of influenza surveillance (geographical spread, laboratory-confirmed detections, syndromic surveillance, outbreak surveillance, severe outcome surveillance, strain characterization and antiviral resistance testing and vaccine monitoring) continue to operate and/or report weekly. Within these components, measurable surveillance indicators, such as the number of influenza detections, outbreaks, and hospitalizations, are tracked over time and used to monitor influenza trends across Canada. This robust surveillance enabled FluWatch to continue to meet its three main program objectives (detect, inform and enable) while in the midst of the COVID-19 pandemic (8). Additionally, FluWatch has pivoted its syndromic, virologic and severe outcomes system components to support aspects of COVID-19 surveillance important to the national response (9).

Discussion

Influenza activity in Canada has persisted at below-average levels since the 2020–2021 season surveillance began in week 35 (August 23, 2020). Influenza activity between weeks 35 and 50 (late August to mid-December) remained below the national threshold that would normally define the start of the Canadian influenza season.

While robust influenza surveillance continues, indicators this season were influenced by the COVID-19 pandemic, given the changes in healthcare-seeking behaviour, impacts of public health measures and influenza testing practices. All surveillance indicators were at historical lows despite increased testing of influenza and ongoing monitoring of the seven key components of FluWatch surveillance.

Due to the heightened surveillance of influenza and the low number of positive laboratory influenza detections, supplementary information was provided to the FluWatch program. This season, at least 27 of the 47 influenza reported detections were associated with receipt of the live attenuated influenza vaccine and likely represent the vaccine-type virus rather than community circulation of the seasonal influenza. The live attenuated influenza vaccine strains are attenuated but can be recovered by nasal swab in children and adults following vaccination with that product (i.e. "shedding") (10). In addition, one laboratory detection was a human infection with a non-seasonal influenza A virus, A/Alberta/01/2020 (H1N2)v, closely related to swine influenzas that commonly circulate in North American swine herds. This was one of five influenza infections caused by a new influenza subtype reported to WHO globally between October and December 2020 (11).

Currently, influenza activity across the Northern Hemisphere is low and stable (5). The current trend is mirroring the 2020 influenza season of the Southern Hemisphere, where historically low levels of influenza were reported throughout the entire season (4).

Low numbers of influenza detections were reported worldwide, and influenza A and influenza B were detected in roughly equal proportions (5). The United States' clinical laboratories reported higher proportions of influenza B detections (59%) compared with influenza A detections (41%) (12). In Canada, influenza A accounted for 64% of influenza viruses detected however, given low numbers, a small number of detections could significantly alter the findings.

Estimates of vaccine effectiveness and coverage are generally reported in March, but vaccine effectiveness estimates may be delayed or may not be measurable for the 2020–2021 season if low influenza circulation continues. These estimates will be included in the FluWatch Weekly report, if and when they are available.

Despite low levels of influenza activity globally, WHO has stated that the threat of influenza epidemics and pandemics persists (9). Thus, it is imperative to maintain the surveillance of influenza, to remain alert to unusual or unexpected events and to prepare to mitigate influenza epidemics when they resurge (9). Low levels of global influenza may adversely affect decisions regarding which influenza strains to include in the next season's influenza vaccines. This emphasizes the need to maintain routine influenza surveillance during the COVID-19 pandemic and to share these data with the WHO Global Influenza Surveillance Response System.

Over the previous five seasons, Canada has crossed the seasonal influenza threshold as late as week 01. While increasing activity in the new year is possible, if Canada maintains non-pharmaceutical public health measures for COVID-19 and reaches target levels of seasonal influenza vaccine coverage, the circulation of

influenza or other seasonal respiratory viruses could remain at historically low levels through the remainder of the 2020–2021 season. Recent models have shown the importance of containing seasonal influenza circulation to mitigate possible syndemic effects on COVID-19 transmission (13).

As influenza is a predictably unpredictable virus, surveillance of influenza must continue in Canada even when circulation levels are low. An increase in the susceptible population, through reduced natural infection or vaccine-induced immunity against influenza, and an eventual relaxation of public health measures, may create the potential for out-of-season waves of influenza activity (summer 2021) or a high intensity season (fall/winter 2021) in the temperate Northern Hemisphere and for several years thereafter (14). Ongoing influenza surveillance efforts will enable early detection when seasonal influenza epidemics return.

FluWatch reports will continue to be published for the remainder of the season and are available on the Weekly Influenza Reports webpage (1).

Authors' statement

The FluWatch team in the Centre for Immunization and Respiratory Infectious Diseases developed the first draft collaboratively; all authors contributed to the conceptualization, writing and revision of the manuscript.

Competing interests

None.

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